Appendix J
Sampling and Analysis Plan Review Checklist

Sampling and Analysis Plan (SAP)
Review Checklist

Project Name: _____

Project Location: _____

GENERAL

Title Page
- a. Is project title listed? Y__N__N/A__
- b. Are names of principal investigators listed? Y__N__N/A__
- c. Are approval/signature lines for responsible parties listed? Y__N__N/A__
- d. Are abbreviations and acronyms listed? Y__N__N/A__

Table of Contents
- a. Is list of essential elements present? Y__N__N/A__
- b. Is list of figures present? Y__N__N/A__
- c. Is list of tables present? Y__N__N/A__
- d. Is list of appendices present? Y__N__N/A__

FIELD SAMPLING PLAN

Project Description
(This information may be referenced to the Project Work Plan.)
- a. Is site location/description discussed? Y__N__N/A__
- b. Is site map present? Y__N__N/A__
- c. Is site history discussed? Y__N__N/A__
- d. Is description of soils, geology, and hydrogeology at site discussed? Y__N__N/A__
- e. Are previous investigations/reports described? Y__N__N/A__

Project Organization and Responsibilities
(This information may be referenced to the Project Work Plan.)
- a. Is responsible organization identified? Y__N__N/A__
- b. Are subcontractors identified? Y__N__N/A__
- c. Are lines of authority identified? Y__N__N/A__

Scope and Objectives of the Field Investigation
- a. Is the purpose of the investigation described? Y__N__N/A__
- b. Are the objectives of the investigation identified for each medium of concern? Y__N__N/A__
- c. Are background data summarized? Y__N__N/A__
- d. Are data gaps identified for each medium? Y__N__N/A__
- e. Are the specific uses of the data (regulatory, risk assessment, etc.) identified? Y__N__N/A__
- f. Is a chart with regulatory/risk-based decision criteria included to ensure appropriate methods and reporting limits are used? Y__N__N/A__

Field Investigation Rationale
- a. Is rationale for geophysical investigations identified? Y__N__N/A__
- b. Are summary figures/tables identifying sampling locations/ analytical analyses by medium included? Y__N__N/A__
- c. Groundwater investigation
  - 1. Is the rationale for monitoring well locations clear? Y__N__N/A__

2. Are upgradient wells or background well locations included? Y__N__N/A__
3. Will well locations define vertical and horizontal extent of contamination? Y__N__N/A__
4. Is the rationale for the well depth/screen depth discussed? Y__N__N/A__
5. Is the rationale for slug tests/pump tests discussed? Y__N__N/A__
6. Is the rationale for the sampling locations/sampling frequency and type of analyses and measurements discussed? Y__N__N/A__
7. Is the rationale and frequency for the QC samples discussed? Y__N__N/A__
8. Are QC samples required to be associated with critical samples? Y__N__N/A__

d. Subsurface Soil Investigations
1. Is the rationale for soil boring locations clear? Y__N__N/A__
2. Are background soil borings included? Y__N__N/A__
3. Will soil borings define vertical and horizontal extent of contamination? Y__N__N/A__
4. Is the rationale for geophysical testing discussed? Y__N__N/A__
5. Is the rationale for the sampling locations/sampling frequency and type of analyses discussed? Y__N__N/A__
6. Are soil samples for geotechnical analysis discussed? Y__N__N/A__
7. Are field screening techniques described? Y__N__N/A__
and criteria identified? Y__N__N/A__
8. Are the rationale and frequency for the QC samples discussed? Y__N__N/A__
9. Are QC samples required to be associated with critical samples? Y__N__N/A__

e. Surface Soil Investigation
1. Is the rationale for the soil sampling locations clear? Y__N__N/A__
2. Is a soil sampling grid defined? Y__N__N/A__
3. Will the soil sampling locations define the horizontal extent of contaminations? Y__N__N/A__
4. Are background soil samples included? Y__N__N/A__
5. Is the rationale for the sampling locations/sampling frequency and type of analyses discussed? Y__N__N/A__
6. Are field screening techniques described? Y__N__N/A__
criteria identified? Y__N__N/A__
7. Are the rationale and frequency for the QC samples discussed? Y__N__N/A__
8. Are QC samples required to be associated with critical samples? Y__N__N/A__

f. Sediment Investigation
1. Is the rationale for the sediment sampling locations clear? Y__N__N/A__
2. Are background sediment samples included? Y__N__N/A__
3. Are samples colocated with SW samples, if needed for risk assessment? Y__N__N/A__
4. Will the sediment samples define the extent of contamination? Y__N__N/A__
5. Is the rationale for the sampling frequency and type of analyses discussed? Y__N__N/A__
6. Are field screening techniques described? Y__N__N/A__
and criteria identified? Y__N__N/A__
7. Are the rationale and frequency for the QC samples discussed? Y__N__N/A__
8. Are QC samples required to be associated with critical

samples? Y__N__N/A__

g. Surface Water Investigation
1. Is the rationale for the surface water sampling locations clear? Y__N__N/A__
2. Are background samples included? Y__N__N/A__
3. Are samples colocated with sediment samples, if needed for risk assessment? Y__N__N/A__
4. Will the surface water samples define the extent of contamination? Y__N__N/A__
5. Is the rationale for the sampling locations/sampling frequency and type of analyses discussed? Y__N__N/A__
6. Are field screening techniques described? Y__N__N/A__
and criteria identified? Y__N__N/A__
7. Are the rationale and frequency for the QC samples discussed? Y__N__N/A__
8. Are QC samples required to be associated with critical samples? Y__N__N/A__

Specific Field Investigation Activities/Procedures
a. Is a summary table of requirements for sample containers, preservation methods, holding time, and sample quantities presented? Y__N__N/A__
b. Drilling/Well Installation
1. Is the drilling method specified? Y__N__N/A__
2. Will the auger/drill stem and rig be decontaminated between holes? Y__N__N/A__
3. Is the length of the well screen defined? Y__N__N/A__
4. Is well screen placement consistent with contaminant location? Y__N__N/A__
5. Are the materials used for the well screen and casing consistent with contaminant type? Y__N__N/A__
6. Is thickness of well casing adequate for depth of well installation? Y__N__N/A__
7. Is a typical well diagram provided? Y__N__N/A__
8. Is there a minimum of 5 cm (2 in.) of annular space around the screen? Y__N__N/A__
9. Is screen slot size appropriate for the size? Y__N__N/A__
10. Does filter pack extend 0.9 to 1.5 m (3 to 5 ft) above the screen? Y__N__N/A__
11. Is bentonite seal to be adequately hydrated or fine sand placed to prevent grout intrusion? Y__N__N/A__
12. Is grout placed appropriately and to the proper level? Y__N__N/A__
13. Are the wells adequately protected? Y__N__N/A__
14. Has possible damage from frost heave been considered in the well design? Y__N__N/A__
15. Do aboveground installations have a drainhole near the base of the protective casing? Y__N__N/A__
16. Does well have a lockable well cap for security? Y__N__N/A__
17. Is the concrete/gravel pad around the well adequate? Y__N__N/A__
18. Are the well coordinates and elevations surveyed? Y__N__N/A__
19. Will wells be developed by bailing and purging? Y__N__N/A__
20. Is well development record maintained? Y__N__N/A__
21. Will field measurements of the groundwater be taken? Y__N__N/A__
22. Are soil borings properly backfilled/abandoned? Y__N__N/A__
23. Will soil borings be logged by a geologist-geotechnical engineer? Y__N__N/A__
24. Are logging procedures discussed? Y__N__N/A__
25. Are rock cores logged and photographed? Y__N__N/A__
26. Is disposal of soil cuttings, well development water, decontamination water, and other wastes addressed? Y__N__N/A__

27. Is a sample boring log with a scale provided? Y__N__N/A__
28. Is a list of field equipment provided? Y__N__N/A__

29. Are sample well installation diagram and development record form provided? Y__N__N/A__
30. Are all standard field parameters to be recorded? Y__N__N/A__
31. Is a hard-bound logbook maintained? Y__N__N/A__
32. Are slug test procedures described? Y__N__N/A__

c. Groundwater Sampling
1. Are water level measurements taken before well purging? Y__N__N/A__
2. Are 3 to 5 well volumes purged prior to sampling the well? Y__N__N/A__
3. Are sampling devices described? Y__N__N/A__
4. Are purging devices described? Y__N__N/A__
5. Is filtration method described for collecting sample for dissolved metals? Y__N__N/A__
6. Are methods to obtain field measurements (pH, temperature, specific conductivity) described? Y__N__N/A__
7. Are sampling devices decontaminated between samples? Y__N__N/A__
8. Are procedures for collecting QA/QC samples addressed? Y__N__N/A__
9. Are trip blanks sent with samples for volatile organic analysis? Y__N__N/A__

d. Soil Sampling
1. Is sampling equipment described and appropriate for the purpose and site conditions? Y__N__N/A__
2. Are sample containers for volatiles filled before soil is composited? Y__N__N/A__
3. Is head space in sample containers for volatiles eliminated? Y__N__N/A__
4. Is sampling instrument decontaminated between samples? Y__N__N/A__
5. Are procedures for collecting QA/QC samples addressed? Y__N__N/A__
6. Are trip blanks sent with samples for volatile organic analysis? Y__N__N/A__

e. Sediment Sampling
1. Are sample locations referenced to a permanent structure and located with field measurements? Y__N__N/A__
2. Are sediment samples collected after surface water samples? Y__N__N/A__
3. Are sampling instruments appropriate? Y__N__N/A__
4. Are sampling instruments decontaminated between samples? Y__N__N/A__
5. Are excess water, sticks, rocks, and other debris removed before placing sediment into sample containers? Y__N__N/A__
6. Are procedures for collecting QA/QC samples addressed? Y__N__N/A__

f. Surface Water Sampling
1. Is surface water sample collected before sediment sample? Y__N__N/A__
2. Is depth of water measured? Y__N__N/A__
3. Are sampling instruments described and appropriate for purpose and site conditions? Y__N__N/A__
4. Are sampling procedures described? Y__N__N/A__
5. Are methods to obtain field measurements (pH, temperature, specific conductance) described? Y__N__N/A__
6. Are sampling instruments decontaminated between samples? Y__N__N/A__
7. Are procedures for collecting QA/QC samples described? Y__N__N/A__

g. Sample Packaging and Shipping
1. Are samples required to be chilled immediately after

being collected? Y__N__N/A__
2. Are shipping coolers made of suitable material? Y__N__N/A__
3. Is empty space in cooler filled with insert packing material? Y__N__N/A__
4. Are bottles enclosed in clean plastic bags? Y__N__N/A__
5. Are sample tags affixed to sample containers? Y__N__N/A__
6. Are bottles placed upright in cooler in a way that they do not touch? Y__N__N/A__
7. Are bags of ice placed in coolers containing samples for chemical analysis? Y__N__N/A__
8. Is chain of custody form sealed in plastic bag and taped to inside lid of cooler? Y__N__N/A__
9. Is cooler drain taped shut? Y__N__N/A__
10. Is cooler lid secured with tape? Y__N__N/A__
11. Is completed shipping label taped to top of cooler? Y__N__N/A__
12. Are "This Side Up" labels placed on all four sides of cooler? Y__N__N/A__
13. Are "fragile" labels placed on two sides of coolers? Y__N__N/A__
14. Are signed custody seals affixed to the front right and left side of the coolers? Y__N__N/A__
15. Are medium/high concentration samples placed in metal cans and secured with three clips prior to placement in cooler? Y__N__N/A__
16. Are metal cans containing medium/high concentration samples properly labeled? Y__N__N/A__

h. Is a schedule for the field activities presented? Y__N__N/A__

i. Are daily quality control reports described? Y__N__N/A__
1. Are notification and corrective action procedures discussed? Y__N__N/A__
2. Are procedures to deviate from approved SAP described? Y__N__N/A__

j. Is disposal of RI-derived wastes properly documented? Y__N__N/A__

QUALITY ASSURANCE PROJECT PLAN (QAPP)

Quality Assurance Objectives
(This information may be referenced to the Project Work Plan.)
a. Are field measurement objectives discussed? Y__N__N/A__
b. Are analytical method detection limits defined? Y__N__N/A__
c. Are quality control parameters defined? Y__N__N/A__
1. Precision and accuracy Y__N__N/A__
2. Completeness Y__N__N/A__
3. Representativeness Y__N__N/A__
4. Comparability Y__N__N/A__

Sample Custody/Documentation
a. Is a field logbook maintained with appropriate information concerning drilling/sampling? Y__N__N/A__
b. Is method of identifying photographs discussed? Y__N__N/A__
c. Is sample numbering system appropriate? Y__N__N/A__
1. Project designator Y__N__N/A__
2. Location designation Y__N__N/A__
3. Matrix code Y__N__N/A__
4. Sample sequence numbers Y__N__N/A__
5. Depth interval (if required) Y__N__N/A__

d. Sample Documentation
1. Does information on sample label include:
-- Site name Y__N__N/A__

-- Identification of sample station number Y__N__N/A__
-- Date and time of collection Y__N__N/A__
-- Name of sampler Y__N__N/A__
-- Analytical analyses requested Y__N__N/A__
-- Media sampled Y__N__N/A__
-- Preservation method Y__N__N/A__

2. Are completed custody seals required over sample container (except VOA) lids? Y__N__N/A__
3. Does chain-of-custody record contain appropriate information? Y__N__N/A__
4. Are receipts for sample forms required? Y__N__N/A__
5. Are the step-by-step sample documentation procedures explained? Y__N__N/A__
6. Are procedures to correct sample documentation explained? Y__N__N/A__

Laboratory Analytical Procedures

a. Is laboratory QA plan available? Y__N__N/A__
b. Are analytical methods specified? Y__N__N/A__
c. Are detection limits specified? Y__N__N/A__
d. Are performance and systems audits described and scheduled? Y__N__N/A__
e. Is preventive maintenance addressed? Y__N__N/A__
f. Are instrument calibration procedures and frequency addressed? Y__N__N/A__
g. Are laboratory's data reduction, validation, and documentation and custody procedures addressed? Y__N__N/A__
h. Are requirements for timing of data submittals, reporting format and contents, and recipients of data addressed? Y__N__N/A__

CONCLUSION

_____ Approval Recommended

_____ Approval Recommended with Comments

_____ Resubmission Recommended

Reviewed: _____

Date: _____